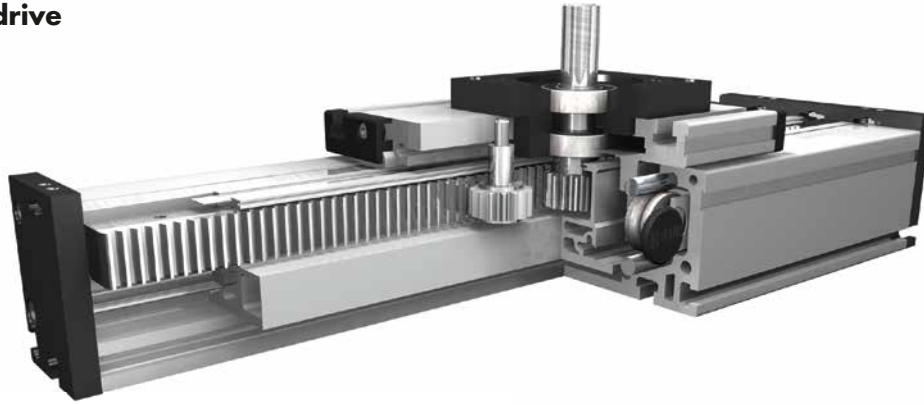


## Rack and pinion drive

**Function:**

This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a high precision rack. The rack and pinion system is suitable for highly dynamic servo operation and ideal for lifting movements. The pinion is equipped with maintenance-free ball bearings. The rack is lubricated by a toothed felt wheel.

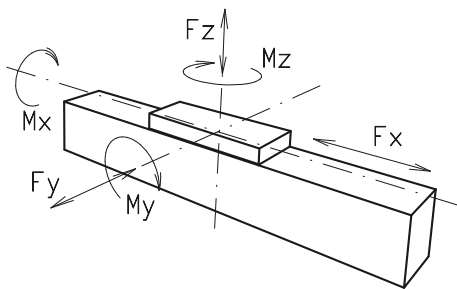
**Fitting position:** As required. Max. length 6.000 mm without joints.

**Carriage mounting:** By T-slots.

**Unit mounting:** By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.

**Rack:** 6h23 Modul 2 (hardened and ground), repeatability  $\pm 0,1$  mm.

**Carriage support:** In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

**Forces and torques**

Size	120		160		200	
	static	dynam.	static	dynam.	static	dynam.
$F_x$ (N)			1900	1800	4000	3800
$F_y$ (N)			3000	2000	4400	3100
$F_z$ (N)			3500	2800	4900	4400
$M_x$ (Nm)			400	320	600	510
$M_y$ (Nm)			360	300	560	480
$M_z$ (Nm)			180	150	310	275
<b>All forces and torques related to the following:</b>						
existing values $\frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$						
<b>No-load torque</b>						
Nm			1,5		2,6	
<b>Speed</b>						
(m/s) max			3		5,0	
<b>Tensile force</b>						
permanent (N)			1900		3000	
<b>Geometrical moments of inertia of aluminium profile</b>						
$I_x$ mm <sup>4</sup>			22,2x10 <sup>5</sup>		63,8x10 <sup>5</sup>	
$I_y$ mm <sup>4</sup>			122,0x10 <sup>5</sup>		335x10 <sup>5</sup>	
Elastic modulus N/mm <sup>2</sup>			70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

$$M_o = \frac{F \cdot P \cdot S_i}{2000 \cdot \pi} + M_n$$

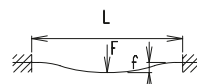
$$P_o = \frac{M_o \cdot n}{9550}$$

F = force (N)  
 P = pulley action perimeter (mm)  
 S<sub>i</sub> = safety factor 1,2 ... 2  
 M<sub>n</sub> = no-load torque (Nm)  
 n = rpm pulley (min<sup>-1</sup>)  
 M<sub>o</sub> = driving torque (Nm)  
 P<sub>o</sub> = motor power (KW)

Deflection:

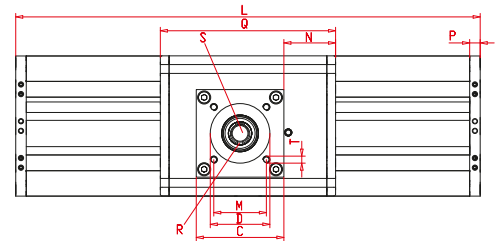
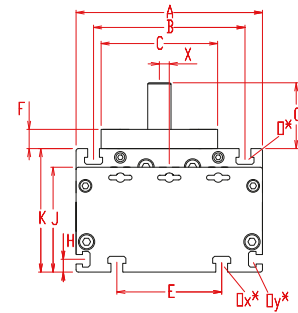
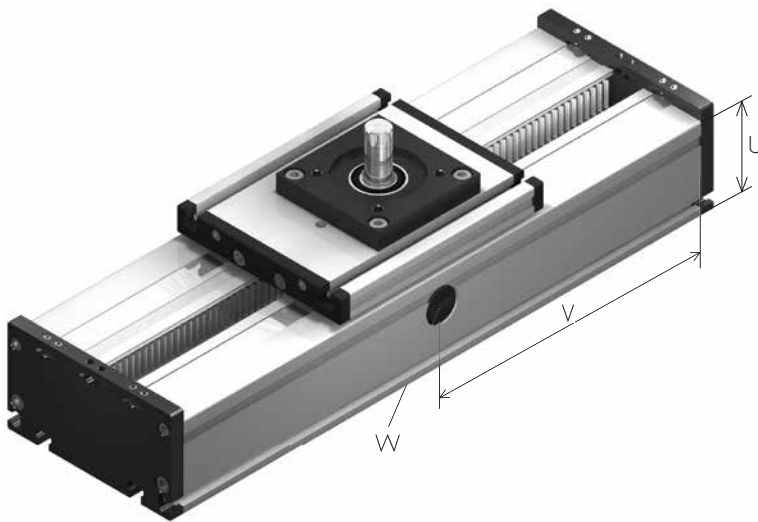
$$f = \frac{F \cdot L^3}{E \cdot I \cdot 192}$$

f = deflection (mm)  
 F = load (N)  
 L = free length (mm)  
 E = elastic modulus 70000 (N/mm<sup>2</sup>)  
 I = second moment of area (mm<sup>4</sup>)



# Positioning system DLZA 120, 160, 200

Dimensions (mm)



V = Q + 100 mm  
W = servicing position

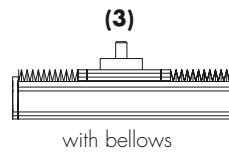
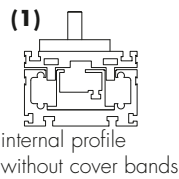
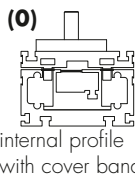
\*For slide nuts refer to chapter 2.2 page 2

Increasing the carriage length will increase the basic length by the same amount.

Size	Basic length L	A	B	C	D ±0,05	E	F	G	H	J	K	M	N	O for	Ox for	Oy for	P	Q	T for	U	X	Basic weight	Weight per 100 mm	
DLZA 120																								
DLZA 160	240	160	130	100	68	90	16,5	56,5	11	90	106	60	59	M 8	M 8	M 6	12	200	M 8	80	8,5	13,0 kg	2,10 kg	
DLZA 200	320	200	160	120	90	140	20	45	15	110	129	80	95	M 10	M 10	M 8	15	270	M 8	100	5	28,9 kg	6,15 kg	

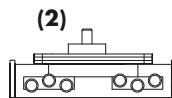
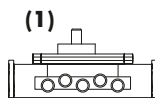
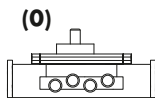
7.1

**0 Choice of guide body profile:**



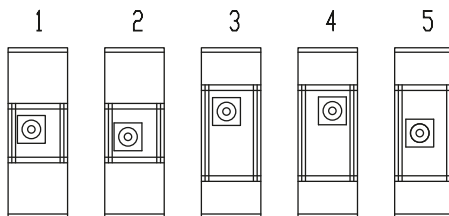
Stainless versions upon request.

**0 Choice of carriage:**



Size □	Version 0		Version 1		Version 2	
	Q	L	Q	L	Q	L
120						
160	200	240	250	290	>300	>340
200	270	320	330	380	>410	>460

**1 Drive version:**



**Shaft dimensions**

Size □	Shaft	Key	Pinion	
	∅ h6 x length		R	mm/rev.
	S			
120				
160	20 x 40	6x6x35	100,53	2
200	18 x 25	6x6x20	94,25	2

Basic length + stroke = total length

DLZA 160 1 0 0 1 0 0 1 01500

Pos. 1 2 3 4 5 6 7

Sample ordering code:

DLZA160 with internal profile and cover bands, standard carriage, 1260 mm stroke.

